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**PROGRESS REPORT OPERABLE UNIT 1 -
WASTE PIT AREA OCTOBER 1993**

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PROGRESS REPORT

OCTOBER 1993

Operable Unit 1 WASTE PIT AREA

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Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project. The nature and extent of contamination at the Fernald site and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The Fernald site has been divided into five sections, known as operable units, for environmental investigation and cleanup. The operable units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified that call for more immediate action. These actions are called "removal actions" and are initiated where there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal actions are coordinated with U.S. EPA and Ohio EPA.

This progress report on Operable Unit 1 discusses its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work being done to alleviate near-term concerns.

Background

Operable Unit 1 includes the six waste pits, the Burn Pit and the Clearwell. The six waste pits, built between 1952 and 1979, contain waste from past operations at the Fernald site. No waste has been placed in any of the pits since the mid-1980s.

Waste Pits 1, 2, 3 are covered with soil. Waste Pit 4 is covered with bentonite clay and a synthetic cover. Waste Pits 5 and 6 are lined with synthetic

membranes. The pits range in size from that of a football field to a baseball diamond and vary in depth from 13 to 30 feet. It is estimated that the six pits contain approximately 473,000 cubic yards of waste, including uranium, thorium and other radioactive and chemical elements.

The Burn Pit, built in 1957, was used to burn laboratory chemicals and general refuse before it was taken out of service in 1970.

The Clearwell was a settling basin for stormwater runoff from portions of the waste pit area including Waste Pits 1, 2, 3 and Waste Pit 5. Sediment in the base of the Clearwell is estimated to be 3.5 feet deep and contains concentrations of radionuclides and chemical constituents.

RI/FS Activities

Remedial Investigation Report: The Remedial Investigation (RI) Report for Operable Unit 1 was submitted to U.S. EPA on October 4, 1993. The RI Report provides details about the nature and extent of contamination in Operable Unit 1 and establishes remedial action objectives. The report also includes a Baseline Risk Assessment for Operable Unit 1. This Baseline Risk Assessment evaluates the pathways of exposure for existing conditions prior to any remedial activities in Operable Unit 1.

Comments from U.S. EPA and Ohio EPA on the draft Remedial Investigation Report are expected in December 1993.

Treatability: Materials from the pits are being used to test waste treatment technologies -- a process called treatability studies. Treatability studies are done in three phases: 1) remedy screening, 2) remedy selection, and 3) remedy design. Three treat-

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ments are being evaluated for Operable Unit 1 wastes:

• **Solidification:** In this process, wastes are stabilized with cement. The Remedy Selection portion of cementation tests was completed in August 1993. As part of these tests, each of the cement mixtures is subjected to a series of physical and chemical tests, such as leaching the waste in acid, to determine which cement mix design has the best ability to retain its physical form and stabilize the waste.

• **Vitrification:** In this process, wastes are transformed into glass. The Remedy Selection portion of vitrification tests also was completed in August 1993. Laboratory-scale Remedy Design treatability testing is progressing at GTS Duratek and Catholic University of America with the operation of a 100 kilograms/per day glass melter located on the campus of Catholic University.

• **Encapsulation:** Polymer encapsulation, a relatively new technology, uses commonly available non-toxic plastics such as polyethylene (the same material used in milk and food containers) to securely surround and bind together particles of dried waste material. This technology is attractive because it uses inexpensive, recycled, readily available non-toxic materials; it results in a safe and impact resistant form for shipping; it can be made in any size and shape according to shipping and disposal requirements, and it appears to be tolerant of a large range of waste composition. The resulting waste form is lighter than many other waste forms; however, this reduced density corresponds to an increase in waste volume.

The final Treatability Study that discusses the results of all the treatability testing is scheduled to be issued to DOE by November 30, 1993.

Feasibility Study: The Feasibility Study (FS) Report for Operable Unit 1 is scheduled to be submitted to U.S. EPA in March 1994. Data obtained from the Remedial Investigation is used during the Feasibility Study to identify potential treatment options, screen and evaluate treatment technologies, and assemble that information into cleanup alternatives for the waste pit area.

Removal Actions

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Waste Pit Area Containment Improvement (Removal Action No. 22): This Removal action was designed to reduce the potential for erosion of contaminated materials by wind or water, to stabilize the south berm of Waste Pit 4, and to improve drainage of the waste pit area in Operable Unit 1. Field work began in April 1993 and was completed in July 1993.

Specific work accomplished under this removal action included regrading drainage ditches adjacent to Waste Pits 3, 4, 5, and 6, and resurfacing the access roads to these pits. The flow line of the drainage ditches either were upgraded with riprap and grout or with sod. The riprap placed along the Waste Pit 4 south berm will stabilize that area. All areas affected by the removal action were seeded and protected by straw or jute matting.

DOE submitted its final report to U.S. EPA in October 1993.

Cleanup Alternatives

Various alternatives -- along with the no action option -- are anticipated to be carried forward for detailed analysis in the Feasibility Study. Operational scenarios for the alternatives are being developed to support cost estimates and evaluation. The operational scenarios examine all aspects of the remedial action, including excavation, dewatering, material handling, various types of waste pre-treatment and treatments, waste disposal, and transportation. In general, the options being developed for Operable Unit 1 call for waste excavation, some kind of treatment or combination of treatments, and either on- or off-site disposal. The types of treatment depend in large part on where the waste is disposed.

Additional information about Operable Unit 1 is available in the Public Environmental Information Center (PEIC), where Fernald Project cleanup documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164. The hours are 9 a.m. to 8 p.m. Monday and Thursday; 9 a.m. to 4:30 p.m. Tuesday, Wednesday, and Friday, and 9 a.m. to 1 p.m. Saturday.